RESEARCH OF MIDSEASON POTATO VARIETIES SUITABLE FOR ORGANIC GROWING

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In 2011, most Hungarian organic farms planted potato varieties that are common in conventional agriculture, although not all of these were suitable for organic growing. The choice of variety was based solely on farmers' experience, as research results were not available. To improve organic potato cultivation, ÖMKi initiated an on-farm participatory research program for evaluating potato varieties with different resistance attributes for organic growing. The variety trials were carried out during 2012-2015 in all together 22 organic farms in several growing regions of Hungary. The four-year trials were conducted with participatory on-farm research methods: potatoes were planted and cultivated following farmers' usual practice, so cultivation conditions and technology were different across experimental sites. Quantitative and qualitative parameters of 13 midseason potato varieties were assessed; the set of varieties was modified during the year, based on previous trial results. Those varieties were chosen for testing, which according to their breeders had certain degree of resistance to any relevant potato disease or abiotic stress. At harvest yield was recorded. Unsorted samples of 50 tubers were taken from each test plot of each variety. Visual inspection was conducted on tubers' surface and infections of *Streptomyces*, *Rhizoctonia*, *Fusarium*, and *Erwinia* were recorded. Moreover, severe damage by animals, *Agriotes* larvae, and machines was registered. We also assessed deformed or greened tubers.

Average yield of varieties varied between 2.19-3.45 kg/m² throughout the four years. The most relevant quality problem was *Streptomyces* infection (15,9% of tubers). The damage of animals (6,23%) and *Rhizoctonia* infection (5,9%) occurred on a lower level. No significant differences could be shown among the varieties regarding the assessed parameters. However, regarding the likelihood of soil-borne infection (*Streptomyces, Rhizoctonia, Fusarium)*, significant correlations (using Spearman's correlation) were found with several elements of the cultivation technology (irrigation, fertilization) and certain soil parameters (e.g. soil pH, soil sticky point).

After summarizing the data of the four-year trials, we could not identify one variety among all midseason genotypes tested, which would have performed best on every location. Varieties could be recommended to farmers according to the location and specific characteristics of their farms. Generally these well

performing varieties were Hungarian bred resistant varieties. Besides summarizing and sharing research results, regular field trips and winter meetings were arranged within the on-farm network. The communication was highly improved among the participants of the organic potato sector, and a well-working organic potato working group was formed. Also an outcome of the working group's activity is a published technical leaflet on organic potato cultivation.